Preparing the Public: Making CCS "Common Knowledge"

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Presented at "Taking Steps Toward Deployment," May 8-11, 2006

Most analyses agree that a major issue in realizing the potential value of carbon dioxide capture and storage (CCS) technologies is both the speed and the scale of the deployment process that would need to take place. In order for fast, large-scale deployment to happen, CCS systems must be viewed by various stakeholders as trusted and ordinary, that is, part of the "common knowledge" background that includes other technologies. CCS installations must draw no more attention than any other large-scale emissions abatement systems.

Previous experience indicates that public acceptability is critical to this process. Therefore, essential steps to pave the way for deployment of CCS must include mechanisms designed to promote open public dialogue, exchange of information, and discussion of issues, including ways to achieve mutually acceptable solutions. Public dialogue is a crucial element of many other processes, from enactment of regulations to siting and operations considerations.

This paper will explore several public participation mechanisms that have been used effectively in introducing and deploying new technologies, going on to discuss the strengths of a multifaceted strategy for assessing public perceptions, providing information to various stakeholders or publics, and engaging those stakeholders in designing an acceptable implementation process for CCS technologies. As with all public participation efforts, it is important to recognize that "the public" is not one public but a range of publics with differing interests, issues, levels of knowledge and preferences for particular participation mechanisms.

For CCS technologies, the issue is not just the acceptability of individual projects but rather the acceptability of the whole of idea and class of technologies. In order to establish the potential benefits of CCS that may be judged to offset the risks, CCS must be set in the context of the challenges involved in reducing emissions for facilities that use fossil fuels and emit CO_2.

Moreover, the context is much broader than the subjects of climate change and technology. For various publics, the context includes the nature of the relationships between people and entities involved, the extent and nature of the information provided, the fairness and openness of the decision-making process, and the degree of accountability for consequences – elements of what we have called the "acceptability diamond." (Bradbury, *et al.*, 1994; see also, Webler, *et al.*, 2003) Stakeholders do not see single decisions as narrow technical questions but as part of the complex circumstances of their lives and livelihoods.

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On the other hand, even to discuss technical issues requires a certain level of knowledge that many publics may lack. Giving them such technical information at the start of the process may be overwhelming and alienating, but provision of information is crucial for interested and motivated stakeholders of all types.

Thinking of stakeholder involvement in this way implies several principles. First, information about the technology is only one of several factors that affect public response. A model of communication consisting of knowledgeable researchers transferring information to stakeholders who will then think about things in the "right" way is doomed to failure. Second, stakeholder involvement activities must give equal standing to stakeholders, their concerns, and their knowledge. Input from stakeholders must be seen to be carefully considered and at least addressed, if not used. Third, relationship-building activities are very important, but there must be a real intent to maintain the relationship. Once lost, trust is hard to regain.

Even at the scale of individual projects, it is very important to create a *dialogue* about the issues involved in CCS. That is, providing information to people in a manner that they can understand is important but not enough; even trying to anticipate the concerns that people will have and addressing them is not enough. Engagement mechanisms must also allow important constituencies to raise their own concerns and reframe the larger issues if they wish to do so.

A Sampler of Engagement Mechanisms

With these principles in mind, we can examine a spectrum of ways to engage stakeholders in thinking about carbon dioxide capture and storage. From standard information-providing announcements, meetings, and websites to stakeholder-run events, different mechanisms, tailored to specific circumstances and groups, can be integrated into highly effective programs.

Perhaps the first mechanisms that come to mind involve providing information to relatively uninformed people. Such mechanisms include brochures and pamphlets, presentations in meetings (e.g., to local government officials or businesses), and placement of information on websites. Typically, such materials are tiered, ranging from relatively simple to more complex products. Although these mechanisms frequently provide for feedback via a contact or interactive web feature, they are essentially one-way communication tools, designed to increase understanding of a technology.

However, a host of other mechanisms is available to supplement this basic step of providing information. In the area of climate change, Conde, *et al.* (2005) review participatory methods for the general purpose of developing adaptation policy frameworks related to climate change. They list tools and techniques ranging from participatory workshops to one-on-one interviews, from focus groups to scenario building. Here we review several mechanisms that have been used to obtain public views of climate change and climate change technologies.

Surveys and Focus Groups

Surveys and focus groups are widely used mechanisms that attempt to assess the level of awareness and public attitudes on particular subjects. They provide benchmarks from which to determine changes in knowledge and level of acceptance – useful for gauging the effectiveness of a stakeholder involvement program and absolutely essential for scientific measurement. By definition, they are short-term activities. Surveys may be taken at the beginning of a program and periodically for program evaluation purposes, but no attempt is made to build relationships. Similarly, focus groups usually meet only once or (at the most) several times; if such groups were to continue, they might become advisory groups or citizens' councils.

Focus groups, employed in a wide range of marketing and opinion-gathering activities, are essentially organized discussions with groups to gain a range of perspectives, including shared understandings of everyday life, on a topic of interest (Gibbs 1997). The role of the moderator is very important in achieving a successful outcome. Focus groups can be effective mechanisms when power differences exist between decision-makers and affected groups, when social understandings are important, and when determining the level of agreement or the underlying reasons for viewpoints on a topic is of interest. They can produce a great deal of information in a short amount of time and at low cost. If the group members engage well, the group can contribute to problem solving. However, focus groups can become sessions where people only air complaints, and open-endedness means less quantification is possible.

Citizen Advisory Groups

More sustained engagement may be developed through the use of citizen advisory groups, daylong or multiple-day workshops, citizen juries, or deliberative polling. Because some of these are less well known, we will describe them briefly, along with their use in climate change-related programs of stakeholder involvement.

Citizen advisory groups are a well-known mechanism for sustained engagement. When structured to include representatives of differing community interests, they can help create, at a minimum, a sounding board for community views. At best, they can help create a group that is knowledgeable about the big picture issues, well-equipped to provide informed input to decisions, and able to speak for and prioritize the issues of public concern. However, such groups can be very resource-intensive and may not be able to speak for the whole community.

Deliberative polling

Deliberative polling™, used in Texas deliberations about renewable energy portfolio standards, is a strategy for determining what people think about complex issues such as climate change. Key scientific features of the strategy include random sampling, including representative samples of the public; control groups who do not deliberate, providing valid comparisons for determining what difference deliberative polling makes; and small group deliberation of balanced information provided by experts, who also answer the groups' questions.

Results from a deliberative poll taken in Philadelphia and an online deliberative poll, both in 2003, showed that people, after they had a chance to deliberate, increased their support for spending for foreign aid, requiring higher gas mileage for vehicles, solving environmental problems through international agreements, and concerning ourselves with world problems (such as world hunger and AIDS). The online deliberative poll included a specific item on global warming. Before the deliberation, 63% of the participants agreed that human activity is a cause of global warming; after deliberation, this rose to 72%. In the Texas case, deliberative polling is credited with raising interest in wind power in Texas; the subsequent legislation and private sector activities have greatly increased wind power capacity in the state.

Deliberative polling should not be thought of as an educational tool but rather as a chance for people to gain balanced information, deliberate, and come to informed decisions. That is, the outcome of a deliberative poll cannot be taken for granted.

The Citizens Jury Process

The Citizens Jury process, developed by the Jefferson Center (http://www.jefferson-center.org), brings citizens together to learn about an issue and deliberate together to find a common ground solution. Decision-makers who watch a Citizens Jury project in action or listen to a jury's recommendations are able to learn what an informed public wants, and why. This information can be an invaluable resource for elected officials and other decision-makers at the local, state, and national levels.

In a citizens jury project, a randomly selected and demographically representative panel of citizens meets for four or five days to consider an issue of public significance. The jury, usually consisting of 18 to 24 individuals, serves as a microcosm of the public. Jurors are paid a stipend for their time. They hear from a variety of expert witnesses and are able to deliberate together on the issue. On the final day of their moderated hearings, the members of the citizens jury present their recommendations to the public.

In 2002, a citizens jury consisting of 18 Atlantic Coast residents met for five days to examine global climate change evidence, perspectives, issues, and possible policy options. The project was conducted with support from the United States Environmental Protection Agency. Participants indicated they thought the process was conducted in an unbiased manner (16 "very satisfied," 2 "satisfied").

Other Stakeholder Engagement Strategies

A variety of games and electronic mechanisms have also been developed as effective, low-cost ways to engage people in discussion or elicit their views. For example, the Stabilization Triangle concept and wedge game developed by the Carbon Mitigation Initiative at Princeton University encourages players to become aware of the scale of the effort needed to cut carbon emissions and participate actively in making the tradeoffs involved in planning climate policy (see http://www.princeton.edu/~cmi/).

Other techniques include webcasts, web conferences and combinations thereof. A webcast is a live feed or broadcast including video/audio signal that goes out over the

web and is open to anyone and everyone if they know the address to link to. The session can be recorded and viewed or distributed to an even wider audience long after the event takes place. Although call-in questioning is possible, this is more of a one-way communication method. Web conferencing is a technology that allows groups of people to conduct a meeting, or view and interact with a presentation remotely via computer. It provides a range of capability, including sending a PowerPoint presentation, video clip, application, etc., out over the web to participants who must register and log in to the session with a password. Some may include a white board, and the ability for participants to send in text messages to everyone or just the host. The session is controlled by a host who has control over what everyone else sees and can turn over control to individual participants as necessary.

Alberts (2005), for example, used a teleconference format/internet webcast to begin a Delphi Inquiry about issues in siting wind turbines in Michigan. The public and expert stakeholders attended the teleconference in one of four locations or viewed the presentation via the internet. The entire teleconference was videotaped and made available as a streaming video from the project's website. Discussion after the presentations lasted over an hour, but subsequent survey results showed a lack of technical knowledge needed to engage in dialogue that could lead to regulations.

The merits of multiple strategies

Stakeholder engagement may have one or more of the following purposes:

- To discover people's views on a topic
- To address issues raised by the public
- To provide information
- To engage stakeholders in planning or processes

To engage different groups of stakeholders at different stages requires a multifaceted strategy. For example, a survey must be conducted in an unbiased manner. It cannot be a covert method to gain acceptance or support; if it has this purpose, the results cannot be presented as a scientifically sound assessment of people's views. Rather, the survey results are tainted. Providing information is a worthwhile purpose, but it cannot substitute for engagement with other stakeholders taking part in a dialogue. Information dissemination is effective only if people are interested (for one reason or another) in gaining the information that is being presented to them. Engaging stakeholders in planning or implementation processes – interactively, instead of exclusively one-way communication – requires a commitment that many may be unwilling or unable to give.

A proactive approach to identifying and anticipating key implementation decision points necessitates the use of different engagement mechanisms for different groups. Early in the process, the goal may be to discover people's views on a topic, for which purpose surveys, focus groups, and one-on-one interviews may be very helpful. These mechanisms help to uncover knowledge gaps that may be filled with fact sheets, newsletters, open meetings/briefings, and media coverage of various types. Recent work on public perceptions in The Netherlands (de Best-Waldhober and Daamen 2006) has

found that uninformed opinions are easily changed, emphasizing again the importance of providing knowledge. Techniques designed to discover public views may (if conducted without a rigid format or completely closed questions) show that stakeholders have issues not thought about by government or businesses. Decisions must then be made about what kinds of input would be valuable to have, and how much decision-making power may be shared with stakeholders. Then interactive planning or other mechanisms may be designed to engage stakeholders. Periodically, surveys or other view-discovery methods could be used to measure the changes in attitudes and project plans based on stakeholder involvement.

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